



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/090,094	03/04/2002	Man Hon Cheng	SC11852HP	4346

23330 7590 01/16/2003

MOTOROLA, INC.
CORPORATE LAW DEPARTMENT - #56-238
3102 NORTH 56TH STREET
PHOENIX, AZ 85018

EXAMINER

THAI, LUAN C

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 01/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/090,094

Applicant(s)

CHENG ET AL.

Examiner

Luan Thai

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 13-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: _____

DETAILED ACTION

Election/Restriction

1. Applicant's election of Group I claims 1-12 in Paper No. 4 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Information Disclosure Statement

2. The information disclosure statement (IDS) filed on 03/04/02 has been considered by the examiner.

Oath/Declaration

3. The declaration filed 03/04/02 is acceptable.

Drawings

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations "a **leadframe** to which **bonding pads** of the **integrated circuit device** are **electrically connected**" in claims 3 and 10, "**an encapsulant surrounding the base carrier, the integrated circuit die and at least a portion of the leadframe**" in claims 4 and 11, and "the device is **an exposed pad type package device**" in claims 5 and 12, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Kikuchi et al (6,037,677).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 1-5, Kikuchi et al (see specifically figure 8 and figure 9 upside down) disclose a semiconductor device comprising: a base carrier 11B (e.g., a paddle) having a top side and a bottom side, the top side having a central area for receiving an integrated circuit die 12 and a peripheral area; an extended adhesive material layer 13 disposed on the top side of the base carrier, covering the central area and a large portion of the peripheral area of the base carrier top surface; the integrated circuit die 12 attached to the base carrier with the adhesive material layer at the central area; a leadframe 11A to which bonding pads 12a of the die 12 are electrically connected; an encapsulant 15 surrounding the base carrier 11B, the die 12, and at least a portion of the leadframe 11A, wherein the device is an exposed pad type package device (noted that the bottom side of carrier 11B and lead frame 11A are exposed from the package).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 6-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikuchi et al (6,037,677) in view of Heckman (US 2002/0182774).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 6 and 9-12, Kikuchi et al disclose all the limitations of the claimed invention as detailed above except for the adhesive material layer being in an "X" shaped pattern.

Heckman while related to a similar structure of bonding an integrated circuit die on a base carrier 12 (or a die paddle) of a leadframe (paragraph [0002], lines 6+) teaches (see specifically figures 2-3): an adhesive material layer 16A disposed on the topside of the base carrier 12 in an "X" shaped pattern (paragraph [0023], lines 4+) including two bisecting lines extending beyond the central area and into the peripheral area of the base carrier top surface (paragraph [0021], lines 2+), an adhesive film 14 used to form the pattern of the base carrier 12, and an integrated circuit die 28 attached to the base carrier with the adhesive layer 16A at the central area. The purpose of doing so is to control

over the edges and the final thickness of the bonding layer to a degree that was not previously possible (paragraph [0017], lines 3+).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Heckman teachings to Kikuchi et al's device package in order to control over the edges and the final thickness of the device to a degree that was not previously possible.

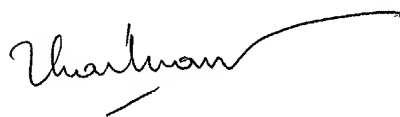
Regarding claims 7 and 8, the proposed device of Kikuchi et al and Heckman discloses all the limitations of the claimed invention (including a four pointed star shape of the adhesive layer 16A, see figures 1, 2, 4A-4B), as detailed above, except for the claimed of other shapes of the adhesive layer (e.g., a six pointed star or an eight pointed star, as recited in claims 8 and 9 respectively). It would have been an obvious matter of design choice to change the shape of the adhesive layer 16A in the proposed device of Kikuchi et al and Heckman to another shape such as a six pointed star or an eight pointed star as claimed, since Heckman does suggest that the adhesive layer 16A may have a variety of symmetrical or asymmetrical shapes (paragraph [0019], lines 1+), and the shape differences are considered obvious design choices and are not patentable unless unobvious or unexpected results are obtained from these changes. Additionally, the Applicant has presented no discussion in the specification which convinces the Examiner that the six-pointed star shape or eight-pointed star shape of the adhesive layer is anything more than a change in number of point in a star shape a person of ordinary skill in the art would find

obvious for the purpose of providing a bond between a die and a base carrier. *In re Dailey*, 149 USPQ 47 (CCPA 1976). It appears that these changes produce no functional differences and therefore would have been obvious.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan Thai whose telephone number is (703) 308-1211. The examiner can normally be reached on 7:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Luan Thai
January 11, 2003